DOCUMENT RESUME

ED 448 156 SP 039 685

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TITLE Teacher Research as Professional Development for P-12 Educators.
INSTITUTION National Partnership for Excellence and Accountability in Teaching, Washington, DC.
SPONS AGENCY Office of Educational Research and Improvement (ED), Washington, DC.
PUB DATE 1999-11-00
NOTE 22p.
CONTRACT RD97124001
AVAILABLE FROM For full text: http://www.ericsp.org/digests/TeacherResearch.htm.
PUB TYPE Information Analyses (070)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Action Research; College School Cooperation; Educational Research; Elementary Secondary Education; *Faculty Development; Partnerships in Education; Teacher Improvement; *Teacher Researchers
IDENTIFIERS Study Groups

ABSTRACT

This paper examines systematic studies of teacher research as professional development activity, identifying specific aspects of this experience that relate to positive teacher and student learning. Section 1 discusses variations in teacher research related to motivation, structural conditions and context, study format and content, incorporation of outside research, and philosophical orientation toward teachers. Section 2 presents five studies of teacher research as professional development: the Madison, Wisconsin, School District Classroom Action Research Program; the Brookline and Boston, Massachusetts, Learning/Teaching Collaborative Inquiry Seminars; the Lawrence School Teacher Study Groups, Brookline, Massachusetts; the Bay Area IV Professional Development Consortium Teacher Action Research Project; and the schoolwide action research model in Georgia and Ames, Iowa. Section 3 presents teachers' self-reports of the research experience. Teachers gain a new sense of confidence from conducting research, often becoming more critical of assertions about what works in classrooms and more skeptical of reform strategies that do not include them in the discussion. Key dimensions of teacher research programs that are important in transforming teaching and student learning are detailed (e.g., creating a culture of inquiry that respects the voices of teachers and the knowledge they bring to the research experience). (Contains 27 references.) (SM)

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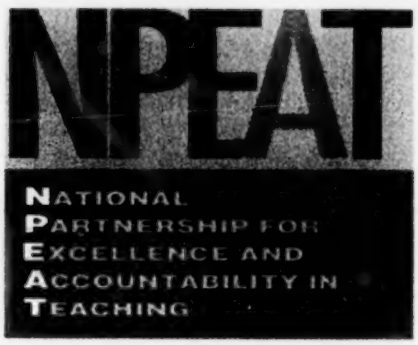

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Primary funding for NPEAT comes from the Office of Educational Research and Improvement, U.S. Department of Education under contract number RD97124001. The positions expressed here do not necessarily reflect the positions or policies of the Office of Educational Research and Improvement or the U.S. Department of Education.

Teacher Research as Professional Development for P-12 Educators

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November 1999

By validating teachers as knowers as well as doers, teacher research can turn traditional

> *professional development on its head, offering the possibility of major long-term changes that are generated by teachers themselves, based on their own investigations of practice (Check, 1998, pp.17-18).*

What constitutes good professional development for teachers? What impacts classrooms? What helps teachers become more effective in promoting student learning? In the last decade, educators have developed a vision of good professional development that emphasizes the importance of designing professional development activities that focus on issues teachers deem important in their daily work, that respects and builds on the knowledge and expertise teachers already have, and that nurtures and supports teachers' intellectual leadership capacity (Corcoran, 1995; Little, 1993). An increasingly common activity that potentially addresses all three of these criteria is **teacher research**, a form of inquiry that involves teachers in developing their own research questions and investigating their own classroom practices.

Defining Teacher Research

With respect to research, teachers have traditionally been seen primarily as subjects or consumers of research done by others. The difference with teacher research is that it is not research on other people, nor is it developed around topics deemed important by other people. Rather, teacher research involves teachers directly in the selection of immediate, compelling, and meaningful topics to explore with respect to their own practice. Furthermore, it is the teachers themselves who carry out the research on their own work in order to improve what they do, including how they work with and for others. In these respects, teacher research treats teachers as autonomous, responsible agents who participate actively in directing their own work and their own professional development.

The result, as with other forms of qualitative and social science research, is often much messier and ambiguous than is comfortable for many traditional researchers. It is no surprise then, that differences of opinion abound regarding the validity and usefulness of teachers researching their own practice. While there is growing amount of testimony about the positive outcomes of this kind of research, there are several problems with drawing immediate conclusions about its value from this testimony alone. For example, many of the claims about the value of teacher research are anecdotal

in nature rather than the result of systematic studies of teachers' research experiences (Huberman, 1996). Even if the accuracy of the claims are accepted however, there is little information about how the research is conducted or supported, making it hard to know how to replicate these successes.

In spite of these concerns, teacher researchers forge ahead. For many teachers, the whole purpose of engaging in research on themselves and in their classrooms is different from the purpose of educational researchers who examine the behaviors and practice of other people. Teachers engage in this kind of research because they believe it's immediate and relevant to their lives and work and because they are interested in better understanding and/or changing their classroom practice. Advocates claim that teacher research is a valuable form of professional development that:

- allows teachers to become better at what they do
- helps teachers become more flexible and open to new ideas
- narrows the gap between teachers' aspirations and realizations
- heightens the quality of student learning
- stimulates positive changes in the culture and productivity of schools
- raises the status of the occupation of teaching in the society
- produces knowledge about teaching and learning that is useful to teachers, policy makers, academic researchers, and teacher educators (Zeichner, 1999)

While teacher research has become very common throughout the world (see Hollingsworth, 1997; McTaggart, 1997; and Zeichner and Noffke, in press), it has been conceptualized and organized in many different ways reflecting different philosophies and beliefs about teaching and learning and learning to teach (Cochran-Smith & Lytle, 1998). In an effort to gather more comprehensive information about the range of different approaches and evidence of their efficacy, we examined the few existing systematic studies of teacher research as a professional development activity. In doing so we identify specific aspects of the teacher research experience that are associated with positive teacher and student learning.

Variations of Teacher Research in North America

For schools and teachers interested in setting up their own research programs, there is no single recipe. In programs across North America, approaches to teacher research start from different ideological perspectives, draw on different intellectual traditions, and emphasize different aspects of practice.

Motivation: Teachers are motivated to conduct research in their own classrooms for a variety of reasons. Noffke (1997) and Fisher (1996) have outlined several different, sometimes overlapping motives:

a) individual progress--to better understand and improve one's teaching and classroom environment,

b) student progress--to know more about and improve student learning

c) knowledge production--to produce and share knowledge useful to other educators,

d) social change--to contribute to greater equity and democracy in schooling and society,

e) personal meaning--a search for connections and meaning in one's work.

Structural Conditions and Context: There is a range of difference in terms of how teacher research is organized, the kinds of resources available to researchers (e.g., reading materials, publication support, release time), and the ways in which teachers are encouraged, supported or required to present their work to others (e.g., as a paper, video, conference presentation). In most cases, teacher participation is on a voluntary basis, but in some instances of school-wide projects, participation is compulsory. Various external incentives have been provided to participants, including time away from school to meet together with colleagues, money, and degrees or professional advancement credits.

Likewise, the contexts of the research vary. Teachers conduct research alone, as part of small collaborative groups, or in school-wide faculty groups. When teacher researchers work in groups, variations can be found in group size, reasons for coming together, and whether there is an external facilitator or university faculty involvement. Some groups consist of teachers from the same department or school, and others mix teachers together from different schools. Some programs involve teachers for a year or less, while others enable teachers to continue their involvement for several years.

Sponsorship: There are many different sponsors of teacher research ranging from teachers themselves, to school districts and teachers' unions, to state departments of education and foundations. Some universities and colleges offer specific courses on teacher research, support teacher research graduate work, and, as in the case of the University of California-Davis and George Mason University, organize and support teacher research on a broad scale.

Format and Content of Studies: Depending on the program, individual studies range in format and content. Cochran-Smith & Lytle (1993) describe four different genres of teacher research:

- journal accounts of classroom life,
- ongoing discussions of practice,
- data analysis of observations, interviews, and document collection, and
- written essays that interpret and analyze various aspects of schooling.

In terms of content, some studies involve posing and investigating a specific question, while others focus simultaneously on several questions. While some studies primarily attempt to develop a better understanding of practice, others also aim to improve it. And finally, some studies focus on specific classrooms issues while others move beyond the classroom to issues that are school-wide or larger.

Incorporation of Outside Research: The degree to which "outside" research is incorporated into the teachers' studies also varies widely. Troen et. al. (1997) describe three patterns that emerged from the teacher research work done in Brookline, Massachusetts:

- some teachers used concepts, questions, and ideas from external research as the starting point for their own research,
- some used them as a resource later on in the research process, and
- some did not use them at all because they didn't it would be helpful.

Philosophical Orientation Toward Teachers: Finally, and probably the most significant dimension along which these teacher research programs vary is the philosophical orientation toward teachers and their learning that can be seen through their different organization, structures, and human

interactions. Some duplicate the hierarchical patterns of authority and dim view of teachers' capabilities that is so commonly found in traditional forms of professional development, while others display a deep respect for teachers and their knowledge and give teachers ownership over their research questions and methods.

Five Studies of Teacher Research as Professional Development

As mentioned above, there are relatively few cases where the professional development aspects of teacher research have been systematically studied. In the five cases below, data have been collected from teachers over a period of time to assess the conditions and impact of the research on teachers, students, and schools. While these examples don't cover the complete spectrum of teacher research in North America, they do reflect significantly different approaches to program organization and support.

1. Madison, Wisconsin School District Classroom Action Research Program

The Madison school district initiated a professional development program for teacher researchers in 1990 that has grown to include nearly 80 teachers each year. In this program, participants from different schools meet for 4-8 hours each month during the school day in research groups of up to 10 teachers over the course of an academic year. Two experienced teacher researchers co-facilitate the groups, which are organized around levels of schooling (i.e. elementary) or themes (i.e. race and gender equity). At the end of the nine months, participants write reports of their studies that are then published by the district and distributed to all schools.

With funding from the Spencer and MacArthur foundations, a two-year study was conducted on the nature and impact of the Madison program (Zeichner, Caro-Bruce, & Marion, 1998). In interviews, many teachers reported that their involvement helped them develop more confidence in their ability to influence their own teaching circumstances. They feel they have become more proactive in dealing with difficult classroom situations and have a greater sense of control over their work. Many report they are more concerned with the need to gather data on an on-going basis to more fully understand the impact of their teaching. A number of teachers reported that they are now more likely to discuss their teaching and collaborate with other teachers. Several indicated that the

respectful nature of the experience raised their expectations for how they should be treated as professionals.

There is also substantial evidence in the Madison interview data and written research reports that teachers became more learner-centered in their practice as a result of conducting research, and that many developed a new appreciation for the knowledge their students bring to class. In some cases, there is evidence that this increased effort to listen to students leads to more democratic and interactive work in the classroom.

As Madison teachers conducted their research, they implemented a wide variety of new practices with their students addressing learning and behavior issues. Although there is very little evidence in these data of improved student learning as measured by standardized test scores, many of the teachers reported improvements in pupil attitudes, involvement, behavior, and/or learning as a direct result of the specific actions taken in their research. The evidence for these changes is provided in the research reports through teacher observations, careful documentation of classroom activities, analysis of student work samples, and teacher-designed assessments.

The Madison study also revealed a number of complications and difficulties associated with the experience for some teachers. At a basic logistical level, periodic shortages of district substitute teachers wreaked havoc on schedules, and even when subs were available, some teachers struggled to prepare sub plans or felt guilty about being away from their classrooms. At a different level, some teachers found aspects of the research process frustrating. For some, narrowing down an area of interest into a research question and finding time to write were two of the most common difficulties of the experience. At yet another level, several teachers who were either trying to build more positive relations with their colleagues back at school or were challenging things accepted by most of the staff in their schools uncovered or intensified tensions that made their lives more complicated. Nonetheless, while many of the Madison participants who were interviewed reported that conducting research was one of the most difficult and intellectually challenging things they had done in their careers, they also felt it was one of the most worthwhile professional development activities they had experienced.

The following factors were identified by the study as key to the success of the Madison program:

- The program is voluntary, and teachers are able to choose their own research questions and data collection and analysis strategies, allowing them to become personally invested in the process.
- There is a recognition and respect for teachers as knowledgeable professionals that is communicated through provision of release time, opportunities to present and publish work, and the way in which meetings are conducted that embraces teachers' struggles while providing intellectual challenge and collegiality.
- Group meetings follow a predictable structure (e.g., generation and refinement of a research question from September to November) and specific rituals and routines (e.g., check-in and check-out procedures) provide a culture for teacher learning that respects the voices of teachers.
- Facilitators, who for the most part are teachers themselves, provide an overall framework for the research process and technical assistance along the way. Rather than providing answers, they model how to ask questions to help teachers think more deeply about their practice .
- Group facilitators are provided with support through a regular seminar in which facilitation issues are discussed and materials are distributed.
- A final written report of each teacher's research is required, which is felt by many to be an important vehicle for analyzing and synthesizing what they have learned.

2. Brookline and Boston, MA Learning/Teaching Collaborative Inquiry Seminars

The Learning/Teaching Collaborative is a teacher-initiated professional development partnership in its twelfth year. One of their efforts focuses on engaging classroom teachers in teacher research through seminars held at the Edward Devotion School in Brookline and the Jackson-Mann School in Boston. Participants include college faculty as well as classroom teachers, and both groups are facilitated by a member of the Collaborative who is not a member of the school staff. The groups meet during the school day once every three to four weeks in three-hour sessions for the presentation of individual members' research projects.

As in the case in the Madison program, specific rituals and routines provide a structure for the

group meetings. Three members distribute materials to other groups members prior to the meeting, and then have up to one hour each to present a segment of their research. These sessions follow a protocol borrowed from the Coalition of Essential Schools that emphasizes asking clarifying questions rather than giving "answers" to the researchers, and sharing both "warm" and "cool" feedback. As with the Madison program, participants reported learning important things from the research of others in their group.

After examining data on these two seminars in a three year study funded by the Spencer and MacArthur foundations, Troen et al (1997) report that participating teachers made changes in areas of curriculum, assessment, and teaching philosophy as a result of their research work. The study found that the participating teachers developed a greater interest in curriculum development while conducting research, and engaged in a variety of related endeavors ranging from "developing new lessons in established curriculum units to implementing entirely new curricula (1997, p.14)." A keen interest in new forms of assessing student learning arose out of the research groups, and teachers became involved in working with student portfolios or designing their own methods of assessment. More subtle changes related to teachers' fundamental philosophies of teaching and learning were also reported, with the conclusion that teachers developed new dispositions and skills to collaborate with their colleagues as a result of this intellectually demanding, imaginative, and analytic work. While the seminars profoundly influenced the participants, however, findings point to little or no affect on the larger school culture (1999, p. 3).

Members in these inquiry seminars typically stay with the program for up to four years, and several factors were isolated which contribute to this sustained participation:

- Research topics, which grow out of real classroom and school contexts, are authentic and relevant to participants.
- Presenters consistently share ideas, data, and questions deemed worthy of close scrutiny and analysis by the group.
- Feedback from other participants is perceived by the researchers to be thoughtful and collegial, leading to closer examination and re-examination of practice.
- Members are intellectually challenged and intrigued by the work and discussion of others in the

group (1999, pp. 2-3).

3. The Lawrence School Teacher Study Groups, Brookline, MA

For over a decade, Lawrence School, a culturally-diverse public elementary school in Brookline, MA, has been a very active place for teacher research. This program was started by three teachers who continue to lead and organize two after-school study group sessions. The study groups--one focused on individual students and the other on children's literature--involve approximately 15 Lawrence teachers on a voluntary basis.

A three-year study by the Spencer and MacArthur foundations investigated the process and structure of the study groups, as well as the effects on classroom practice over time. Karen Gallas, who was then a first and second grade teacher at the school, served as the principal investigator of the study while other teachers served as co-investigators maintaining ongoing journals and gathering data from their classrooms.

The individual child study group uses the "descriptive review process," a highly structured protocol faithfully adhered to at each meeting. Prior to beginning the meetings in a loft area above a classroom, there is a 15-minute period of informal conversation and food provided by the group members. The formal meeting agenda begins with a series of reflections on a word or focusing question that participants then keep in mind throughout the rest of the meeting. Meetings are chaired by one of the teachers and different teachers present information about situations with individual students. Someone takes responsibility for note-taking at each meeting, which are later circulated to all group members. After the initial reflections and presentation, the chair provides a summary of the information. A particular talk protocol called "rounds" is then used to structure the discussions, which involves everyone in the circle having a chance to speak before any cross-circle discussions are allowed. According to the study, these predictable and structured group talk routines create a situation where members listen closely to one another. Over time, the descriptive review process used by the Lawrence School study groups has evolved to include other forms of reflection and analysis such as discussions of particular curricula, assessment instructions, and analysis of student talk.

In contrast, the children's literature group uses a very informal style of conversation rather

than following any structured kind of protocol. The topics of these meetings involve discussions of children and their learning in relation to commonly read texts or theme-based literature. Although both study groups provide significantly different models of teacher inquiry, both create a physical and intellectual space away from the hectic pace of the school day where teachers can slow down and reflect about issues of teaching and learning. From studying the data, Gallas concludes that the kind of deep thinking and public self-critique that goes on in these groups is made possible by a commitment to children, teaching, and self-improvement, and by the close association of teachers over time in an atmosphere where they feel valued and wanted.

Analysis of the study group effects on participating teachers and their students reveal several different influences. First, because the groups place teacher knowledge at the center of the inquiry process, teachers and teacher knowledge are critically examined, explored, and affirmed. A second outcome is a broadening perspective as teachers question their assumptions about themselves and their students and develop new perspectives toward teaching and learning. This broadening of perspective leads to changes in the professional identities of teachers as they learn to more clearly articulate their ideas about education. Finally, there is evidence in the study of changes in classroom practice as a result of study group participation. Teachers' self-reports indicate examples of changes in behavior toward particular students and their parents following a descriptive review, or changes in assessment practices following a series of sessions on district assessment practices. There is also evidence, for example, of teachers giving their students more choice within reading programs as a result of study group discussion on the topic. While there is no direct reporting of how participation in the study groups might have influenced specific learning outcomes of students, the implication is that student learning was enhanced as teachers reflected deeply and critically about their practices in the company of their colleagues.

The following factors were identified by Gallas as keys to the success of the Lawrence School program:

- voluntary attendance of teachers over a long period of time
- valuing the knowledge that teachers bring to the experience while simultaneously helping them problematize assumptions

- a focused mission within the group sessions that is clearly known by all participants
- the right of the teachers to autonomously control the professional development process leading to a commitment to invest in self-examination and improvement.

4. Bay Area IV Professional Development Consortium Teacher Action Research Project

The Teacher Action Research (TAR) Project is a state-funded effort designed to simultaneously support professional development and school reform in the San Francisco Bay area. Now it its eighth year, the project has worked with mixed levels of cohorts of elementary, middle, and high school teachers from urban, rural, and suburban settings. Teacher researchers participate in the project as members of a team of two or more teachers from a school site. All the researchers meet at Mills College for five full days each year for at least two years with Anna Richert, a faculty member at Mills. Meetings focus on developing research and inquiry skills, building community across school sites, and learning about school reform by systematically investigating the process of change. Researchers in TAR are responsible for producing two written products: a "story of practice" which the teacher writes and analyzes for its connection to a larger set of school-wide issues, and a school change study which is collaboratively written by the research team.

Currently, Richert is in the process of analyzing ten case studies (Kent, 1996) and has begun to identify certain features of the program that most promote teacher development. These include a sense of collective responsibility for school reform promoted by the project, the story writing process that begins the research work, the ownership that teachers have of their research questions and study designs, the "audience" factor that teachers associate with the publication process at the end of the project, and the respect within the program for the knowledge and values that teachers bring to the research experience.

In her studies, Richert (1999) has also been able to identify several clear areas of change in the teachers' knowledge, skills, and dispositions. For example, while many teachers initially join the project expecting simply to document classroom life and "prove" the success of their teaching, they move over time toward a more questioning and reflective stance that leads to change in thinking and practice. Teachers feel a renewed sense of professionalism and engagement with teaching that they associate with their involvement in the TAR project and that Richert associates with the intellectual

challenges posed by their research work. She also found that participation in TAR reconnected many of the teachers to their colleagues and expanded their notion of what teachers can and ought to do (1996, p.11). She concludes that the research process involved both the acquisition of new knowledge and uncovering knowledge teachers already had, and reports that some of the participating teachers have brought inquiry into a central place in their professional lives.

5. School-wide Action Research in Georgia and Ames, Iowa

The final program on which there is a significant amount of evaluation data is the School-wide Action Research model that was originally promoted as a vehicle for school renewal by faculty at the University of Georgia. From 1990 through 1996, a team of university and school-based members conducted a study on participating schools from Georgia's League of Professional Schools and from a small group of schools in Ames, Iowa.

The process of school-wide action research in this model involves five phases of inquiry: the faculty selects an area of interest or concern, then they collect, organize, and interpret on-site data related to this area of interest before taking action based on their information. The process is cyclical, and phases overlap as researchers retrace their steps and revise earlier plans while continuing to move forward. External data, such as from educational researchers, is included in the projects. Although a facilitation team coordinates the process in each school, everyone on staff is involved in the research, and some amount of technical assistance is provided to the schools by persons from outside the district.

According to Calhoun (1994), the purpose of this program is school improvement in three respects: (a) improvement in the area identified in the first phase of the research (e.g. to improve writing skills), (b) improvement in equity for students related to the focus of the research (i.e. to ensure that all students benefit), and (c) improvement of the problem-solving capability of the school as a whole.

Analyses of data in Ames and in Georgia revealed a variety of effects of participating in the school-wide action research process. For example, in Ames, most of the interviewed teachers expressed positive feelings about their participation in the process and believed that worthwhile changes were taking place in their schools and classrooms, but a certain number had mixed or

negative responses to the program. This kind of negativity is very unusual with regard to teacher reports of involvement in conducting research and could either reflect the compulsory nature of the process from the teachers' point of view, or some unusual feature in the Ames program. Not enough data are provided to enable readers to understand the reason for the negativity, which is quite extensive in some areas. For example, nearly half the teachers interviewed "characterized school-wide action research as manifesting intentions of control by the central office (Joyce, et. al. 1996, p.73)."

The data from Georgia are somewhat more specific, giving a better sense of changes related to the teacher research process. Schools that closely followed the 5-phase model reported increases in student achievement that were attributed in part to the action research efforts. Teachers who were deeply involved in the research reported an increase in their sense of efficacy (Allen & Calhoun, 1998). Five of the Georgia schools reported increases in student achievement as indicated by course grades and/or results on standardized tests, and other schools reported major reductions in student referrals and suspensions, improvements in student attendance and in student self-esteem, and improved attitudes towards mathematics.

Teachers' Self-Reports of the Research Experience

In order to examine the ways teacher research may contribute to changes in thinking, practice, and collegial relationships, Ernst (1998) draws from a wide variety of teachers' published personal narratives and contributions to electronic mailing lists. The central changes reported in these studies include teacher researchers gaining a new sense of confidence from conducting research, beginning to see themselves as learners and developing closer relationships with their students and colleagues. Many of these teachers wrote journals documenting their research experience or found some other way to keep detailed records of their observations of and discussions with students. These records helped teachers challenge the way they thought about their teaching and develop a more personal connection to their students as a result of a deeper understanding of their interests, values, and abilities. The researchers frequently reported that they now give their students more choice and responsibility in the classroom and have shifted to more learner-centered teaching methods.

Additionally, having experienced a form of professional development that honors and respects

their knowledge, these teachers often "become more critical of assertions about what works in classrooms and more skeptical of reform strategies that don't include them in the discussion (p.23)." Although Ernst found very little support in the accounts for the assertion that teacher research leads to a transformation of school culture, especially in cases where the researchers meet in groups outside of their schools, she did find evidence that teacher researchers develop confidence enabling them to reach out more to colleagues for help and support.

These self-reports, however, tend to provide little information about the specific nature of the research experience, and rarely reveal the ways in which the research has been organized and supported, or how the group experience was impacted. Ernst identifies three critical features that largely confirm the findings of more systematic studies of research groups:

1) the opportunity to meet with colleagues in a supportive environment to share ideas and support one another,

2) the opportunity to receive feedback about one's work from diverse perspectives, and
3) the opportunity to question one's own assumptions about teaching and learning.

Conclusions

The above discussion reveals that unlike many other professional development experiences, teacher research is able to promote particular kinds of teacher and student learning that many teachers find valuable and transformative. The evidence from these reports show that under the right conditions, engaging in teacher research validates the importance of the work teachers do and helps teachers

- become more confident about their ability to promote student learning
- become more proactive in dealing with difficult situations arising in their teaching
- acquire habits and skills of inquiry used beyond the research experience to analyze their teaching
- develop or rekindle an excitement about teaching.

We can also see evidence of direct links between conducting teacher research under particular conditions and improvements in students' attitudes, behavior and learning, although these improved

student outcomes have not always been reported in sufficient detail. Furthermore, because of the limited information provided by studies about the conditions of different teacher research efforts, at this point we do not have a precise view of how varying contexts specifically influence the impact of different programs. Nonetheless, the studies reviewed in this paper do provide us with a good set of "working hypotheses" that can be used as a basis of exploring this matter more deeply in the future.

Key dimensions of teacher research programs that appear to be important in transforming teacher and student learning include:

1) Creating a culture of inquiry that respects the voices of teachers and the knowledge they bring to the research experience

   This does not mean that the voices of teachers should be romanticized (Hargreaves, 19967) or that everything that emerges from their research should be uncritically glorified. Teacher research needs to be taken just as seriously as other kinds of inquiry and evaluated on the basis of both moral and educational criteria (see Zeichner and Noffke, in press).

2) Investment in the intellectual capital of teachers which results in teachers having control over most aspects of the research process

   While openness to teachers taking ownership of their own research might not be attractive to those who want to control their practices, it seems essential if the research is going to make a difference for teachers and their students. In cases where teachers lacked the ability to determine their own research focus, as appears to have been the case for some of the teachers in the Ames, Iowa program, they reacted negatively to what they saw as an administrative attempt to increase controls over them. Most often a balance will need to be achieved between professional development focusing on individuals and that which focuses on organizational features of schools (Guskey, 1995). The Madison program, for example, has dealt with possible tensions between differing priorities of the district and teachers by organizing some groups around district objectives such as assessment and literacy, while giving researchers the autonomy to develop their own projects within a category.

3) Collaboration over a substantial period of time in a safe and supportive group environment

The experience of working in a group where all of the members are engaged in self-study seems to help teachers develop new dispositions and skills to work collaboratively. When teachers feel safe and supported in these groups, communication among members becomes more authentic and informative than the daily talk in staff rooms. These sustained discussions with other teachers over long periods of time seem to be uncommon in teachers' previous experiences, yet important for helping them learn to analyze their practices in depth.

4) Intellectual challenges and stimulation

Contrary to the popular images of teachers as wanting quick fixes or being incapable of serious intellectual activity, teacher researchers in these programs valued the difficulty and challenges provided by group discussions about their work. Teachers interviewed in Madison, for example, valued these "deep discussions" over the shallowness of many of their other professional development experiences.

5) Established rituals and routines that build community within groups

Studies of both the Madison and the Massachusetts programs have provided important information about the protocols facilitators use to structure the inquiry and group processes related to the research process (e.g. determining several possible data collection tools) and group discussion norms (e.g. posing clarifying questions). While the two programs employ different strategies, both are consistent with the critical conditions described above.

The kind of professional development described here represents a long term investment in building the capacity of teachers to exercise their judgment and leadership abilities to improve learning for themselves and their students. It is not a form of teacher education that will produce quick fixes for the complex and ongoing problems of schooling, nor will it compensate for the unsatisfactory working conditions teachers are often forced to endure or the failure of our society to provide the social preconditions necessary for the educational success of all students. In this era of educational accountability and standards, teacher research is not a tool that can be used by policy makers or administrators to externally impose particular changes on teachers' practices. When it is organized and supported according to the kinds of key conditions discussed above, it can become a

professional development experience of great importance to teachers that has a clear impact on teaching and learning.

In the end, the quality of learning for students in schools will depend to no small extent on the quality of opportunities for professional development provided for teachers. While it is appropriate and necessary at times for policy makers and school administrators to set directions for reforms and to provide teachers with the skills and content needed to carry them out, there must also be a place in teachers' lives for the kind of professional development that has been discussed in this paper that respects and nurtures the intellectual and leadership capacity of teachers.

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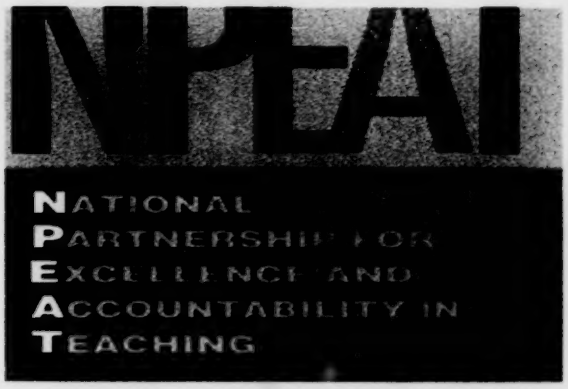

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